Sana'a University
Faculty of Engineering
Department: Electrical Engineering
Title of the Program: Electrical Power and Machines Engineering

37. Course Specification of Power Electronics

I. Course Identification and General Information:							
1.	Course Title:	Power electronics					
2.	Course Code & Number:	PME244					
3.	Credit hours:	C.H				Total	
		Th.	Tu.	Pr.	Tr.		
		2	2	2	-	4	
4.	Study level/ semester at which this course is offered:	Third Year/ Second Semester					
5.	Pre –requisite (if any):	PME113, PME214					
6.	Co –requisite (if any):	NA					
7.	Program (s) in which the course is offered:	Power and Machines Engineering Program					
8.	Language of teaching the course:	English					
9.	Location of teaching the course:	Class &lab					
10.	Prepared By:	Assoc. Prof. Dr. Radwan Al bouthigy					
11.	Date of Approval	2020					

II. Course Description:

This course is prepared to provide students with the principal concepts in the field of power electronics and drives as enabling technologies. It gives students the skills in the definitions, analysis, and solving problems related to power semiconductor devices and drive circuits. The course enables students to discuss the basic topologies of power switching devices, rectifiers, AC voltage controllers, DC choppers, and voltage/current -fed inverters with special emphasis on application of devices and current industrial practice. Laboratory experiments and MATLB simulation tool are carried out for different types of power electronics elements to verify the theoretical concepts.

III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a1	Recognize the common power control devices includes, diodes, Thyristors and transistors and their circuits.	A1

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a2	Define the circuit diagrams, waveforms and equation of different types of power control devices.	A2
b1	Analyze the common power electronic devices which are used in control and solve engineering problems	B2
b2	Differentiate between theory of operation for different power semiconductor devices and circuits	B3
c1	Use the electronic instrumentation and modern simulation tools to implement, design and test power electronic circuits, and useful power control project	C2
c2	Apply a variety of device models and circuit analysis theorems to analysis, design and implementing power control systems for engineering systems applications.	C4
d1	Work with small groups and distribute the tasks with his team.	D1
d2	Use computer and Internet to extract information related to field of study.	D2,D5

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Recognize the common power control devices includes, diodes, Thyristors and transistors and their circuits.	▪ Lectures ▪ Tutorials ▪ Self-learning ▪ Dialogue and discussion	▪ written exam ▪ Oral discussion ▪ Reports evaluation ▪ Presentations and evaluation
a2- Define the circuit diagrams, waveforms and equation of different types of power control devices.	▪ Lectures ▪ Tutorials ▪ Self-learning ▪ Dialogue and discussion	▪ written exam ▪ Oral discussion ▪ Reports evaluation ▪ Presentations and evaluation

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

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b1- Analyze the common power electronic devices which are used in control and solve engineering problems	▪ Lectures ▪ Analysis and Problem solving ▪ Tutorials ▪ Project	▪ Written Test and Quizzes ▪ Laboratory reports evaluation ▪ Project reports ▪ Presentations
b2- Differentiate between theory of operation for different power semiconductor devices and circuits	▪ Lectures ▪ Analysis and Problem solving ▪ Tutorials ▪ Project	▪ Written Test and Quizzes ▪ Laboratory reports evaluation ▪ Project reports ▪ Presentations

© Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1- Use the electronic instrumentation and modern simulation tools to implement, design and test power electronic circuits, electric drives and useful power control project	▪ Lectures ▪ Laboratory ▪ Projects ▪ Design exercises ▪ Simulation tools	▪ Written Test and Quizzes ▪ Laboratory reports evaluation ▪ Presentations evaluation ▪ Project reports ▪ Observation of performance
c2- Apply a variety of device models and circuit analysis theorems to analysis, design and implementing power control systems for engineering systems applications.	▪ Lectures ▪ Laboratory ▪ Projects ▪ Design exercises ▪ Simulation tools	▪ Written Test and Quizzes ▪ Laboratory reports evaluation ▪ Presentations evaluation ▪ Project reports ▪ Observation of performance

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

Head of Department Asst. Prof. Dr. Adel Ahmed Al-Shakiri	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

d1- Work with small groups and distribute the tasks with his team.	▪ Laboratory ▪ Projects ▪ Presentations ▪ Research	▪ Observation and interviews ▪ Laboratory reports evaluation ▪ Research reports ▪ Presentations
d2- Use computer and Internet to extract information related to field of study.	▪ Laboratory ▪ Projects ▪ Presentations ▪ Research	▪ Observation and interviews ▪ Laboratory reports evaluation ▪ Research reports ▪ Presentations

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1.	Introduction	a1,a2,b1,b2	▪ Power Electronics Defined ▪ Power semiconductor devices ▪ Conversion Examples	1	2
2.	Semiconductor switching devices used in power electronics	a1,a2,b1,b2,c1	▪ Power Diodes ▪ Power Transistors ▪ Thyristors and TRIAC	1	2
3.	Uncontrolled Rectifiers	a1,a2,b1,b2,c1,d2	▪ Single phase uncontrolled rectifiers ▪ Three phase uncontrolled rectifiers ▪ Harmonic analysis ▪ Output voltage with LC filter	2	4
4.	Controlled Rectifiers	a1,a2,b1,b2,c1,d2	▪ Single phase-controlled rectifiers ▪ Three phase-controlled rectifiers ▪ Harmonic analysis ▪ Power factor improvement	2	4

5.	DC –DC Chopper Converters	a1,a2,b1,b2,c1,d2	▪ Step down chopper converter ▪ Step up chopper converter ▪ Classifications of chopper converter	3	6
6.	DC – AC Inverters	a1,a2,b1,b2,c1,d2	▪ Single-Phase Voltage Source Inverters ▪ Three-Phase Voltage Source Inverters ▪ Current Source Inverters ▪ Pulse width modulation technique ▪ Harmonic analysis ▪ Closed-Loop Operation of Inverters	3	6
7.	AC Voltage converter	a1,a2,b1,b2,c1,d2	▪ Single Phase AC Controllers. ▪ Three Phase AC Controllers. ▪ Harmonic analysis ▪ Cycloconverters	2	4
Number of Weeks /and Units Per Semester				**14**	**28**

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B – Tutorial Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**Contact hours**	**Learning Outcomes**
1.	▪ Operation and characteristics of diode rectifiers ▪ Performance parameters of uncontrolled rectifiers (diode) ▪ Analyzing of uncontrolled rectifier circuits ▪ Simulating uncontrolled rectifiers by using MATLAB ▪ Effects of load inductance on load currents	2	4	a1,b1,d1,d2
2.	▪ Operation and characteristics of controlled rectifiers (Thyristor) ▪ Performance parameters of controlled rectifiers ▪ Analyzing of controlled rectifier circuits ▪ Simulating controlled rectifiers by using MATLAB ▪ Effects of load inductance on load currents	3	6	a1,a2,b1,b2,c1,d1,d2
3.	▪ Operation dc – dc converters (chopper) ▪ Performance parameters of dc converter ▪ Analyzing of dc converter ▪ Simulating dc converter by using MATLAB ▪ Effects of load inductance on load currents and the conditions for continuous current	3	6	a1,a2,b1,b2,c1,d1,d2

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4.	▪ Operation dc – ac converters known as inverters ▪ Performance parameters of inverters ▪ Analyzing of dc converter ▪ Simulating inverters by using MATLAB ▪ Effects of load impedance on load currents	3	6	a1,a2,b1,b2,c1,d1,d2
5.	▪ Operation of ac voltage controllers ▪ Operation of matrix converters ▪ Performance parameters of ac voltage controllers ▪ Analyzing of ac voltage controllers ▪ Simulating ac converter by using MATLAB ▪ Effects of load inductance on load currents	3	6	a1,a2,b1,b2,c1,d1,d2
Number of Weeks /and Units Per Semester		**14**	**28**	

C - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	Contact hours	Learning Outcomes
1.	▪ Safety regulations and requirements in electrical laboratories. ▪ Introduction to main laboratory devices and instrumentations. ▪ Introduction to main measurement devices. ▪ Reporting format.	1	2	a1,b1,c1,c2
2.	▪ Diodes, SCR and TRIC Characteristics	1	2	a1,b1,c1,c2,d1,d2
3.	▪ Single phase half and full wave uncontrolled rectifier	1	2	b1,b2,c1,c2,d1,d2
4.	▪ Three phase half wave and full wave uncontrolled rectifier	2	4	b2,c1,c2,d1,d2

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5.	▪ Single phase half wave, semi and full wave-controlled rectifier	3	6	c1,c2,d1,d2
6.	▪ Three phase half wave and full wave-controlled rectifier	2	4	a1,a2,b1,b2,c1,c2
7.	▪ Step down chopper with (R- L) Load	1	2	b1,b2,c1,c2,d1,d2
8.	▪ Single phase inverter	1	2	a1,a2,b2,c1,c2
9.	▪ Single phase AC voltage controller	1	2	b2,c1,c2,d1,d2
10.	▪ Review	1	2	a1,a2,b2,c1,c2
Number of Weeks /and Units Per Semester		**14**	**28**	

V. Teaching strategies of the course:

- Lectures
- Problem Solving
- Laboratory works
- Design exercises
- Project work
- Simulation Tools

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1.	Comparison between types of power diodes	a1,a2,b1,b2,d2	3rd	4
2.	Design and implementation of uncontrolled rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	4th	4
3.	Design and implementation of controlled rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	6th	4
4.	Design and implementation of DC – DC choppers circuits using MATLAB tools	a1,a2,b1,b2,c1	8th	4
5.	Design and implementation of DC- AC rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	10th	4
	Total			**20**

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VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1.	Quizzes	4th ,7th , 10th, and 13th	20	10%	a1,a2,b1,b2
2.	Assignments & Homework, Tasks & Presentation	Weekly	20	10%	a1,a2,b1,b2,d1,d2
3.	Mid-Term exam	7th	20	10%	a1,a2,b1,b2
4.	Final exam practical	15th	40	20%	a1,a2,b1,b2,c1,c2
5.	Final Exam theory	16th	100	50%	a1,a2,b1,b2
	Total		**200**	**100%**	

VIII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. M. H. Rashid, 2014, "Power electronics: circuits, devices, and applications," fourth edition, Prentice Hall
2. Austin Hughes, (2006) Electric Motors and Drives Fundamentals, Types and Applications, 3rd Edition, Elsevier Ltd.

2- Essential References.

1. Cyril W. Lander, 1993, "Power electronics", 3rd edition, McGraw-Hill.
2. B. W. Williams, 1992, Power Electronics, Devices, Drivers, Application and Passive components
3. Fang Lin Luo, Hong Ye, Muhammad Rashid, "Digital Power Electronics and Applications", 2005, Elsev USA
4. E. Acha, Power Electronics control in Electrical system, 1st, 2002, Newnes.

3- Electronic Materials and Web Sites etc.

1. www.goelectricdrive.com/
2. www.electricmachinery.com/
3. www.goelectricdrive.com/
4. http://www.ece.tamu.edu/~empelab/

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IX. Course Policies:	
1.	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring an approved statement from university Clinic
2.	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3.	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam-
4.	**Assignments & Projects:** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time-
5.	**Cheating:** For cheating in exam, a student will be considered as failure. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty-
6.	**Plagiarism:** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proved a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7.	**Other policies:** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. Lecture notes and assignments my given directly to students using soft or hard copy

Reviewed By	**Vice Dean for Academic Affairs and Post Graduate Studies: Asst. Prof. Dr. Tarek A. Barakat** **President of Quality Assurance Unit: Assoc. Prof. Dr. Mohammed Algorafi** **Name of Reviewer from the Department: Asst. Prof. Dr. Adel Ahmed Al-Shakiri**
	Deputy Rector for Academic Affairs Asst. Prof. Dr. Ibrahim AlMutaa **Assoc. Prof. Dr. Ahmed Mujahed** **Asst. Prof. Dr. Munasar Alsubri**

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37. Template for Course Plan of Power Electronics

I. Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Assoc. Prof. Dr. Radwan Al bouthigy	**Office Hours**					
Location& Telephone No.	775284933	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	radwan006@yahoo.com						

II. Course Identification and General Information:						
1.	Course Title:	Power Electronics				
2.	Course Number & Code:	PME244				
3.	Credit hours:	C.H				Total
		Th.	Tu.	Pr.	Tr.	
		2	2	2	-	4
4.	Study level/year at which this course is offered:	Third Year/ Second Semester				
5.	Pre –requisite (if any):	PME113, PME214				
6.	Co –requisite (if any):	None.				
7.	Program (s) in which the course is offered	Power and Machines Engineering				
8.	Language of teaching the course:	English				
9.	System of Study:	semester				
10.	Mode of delivery:	Semesters				
11.	Location of teaching the course:	Class & lab				

III. Course Description:

This course is prepared to provide students with the principal concepts in the field of power electronics and drives as enabling technologies. It gives students the skills in the definitions, analysis, and solving problems related to power semiconductor devices and drive circuits. The course enables students to discuss the basic topologies of power switching devices, rectifiers, AC voltage controllers, DC choppers, and voltage/current -fed inverters with special emphasis

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on application of devices and current industrial practice. Laboratory experiments and MATLB simulation tool are carried out for different types of power electronics elements to verify the theoretical concepts.

IV. Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop**:**

1. Recognize the common power control devices includes, diodes, Thyristors and transistors and their circuits.
2. Define the circuit diagrams, waveforms and equation of different types of power control devices.
3. Analyze the common power electronic devices which are used in control and solve engineering problems
4. Differentiate between theory of operation for different power semiconductor devices and circuits
5. Use the electronic instrumentation and modern simulation tools to implement, design and test power electronic circuits, and useful power control project
6. Apply a variety of device models and circuit analysis theorems to analysis, design and implementing power control systems for engineering systems applications.
7. Work with small groups and distribute the tasks with his team.
8. Use computer and Internet to extract information related to field of study.

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1.	Introduction	a1,a2,b1,b2	▪ Power Electronics Defined ▪ Power semiconductor devices ▪ Conversion Examples	1st	2
2.	Semiconductor switching devices used in power electronics	a1,a2,b1,b2,c1	▪ Power Diodes ▪ Power Transistors ▪ Thyristors and TRIAC	2nd	2
3.	Uncontrolled Rectifiers	a1,a2,b1,b2,c1,d2	▪ Single phase uncontrolled rectifiers ▪ Three phase uncontrolled rectifiers ▪ Harmonic analysis ▪ Output voltage with LC filter	3rd, 4th	4
4.	Controlled Rectifiers	a1,a2,b1,b2,c1,d2	▪ Single phase-controlled rectifiers ▪ Three phase-controlled rectifiers ▪ Harmonic analysis ▪ Power factor improvement	5th, 6th	4
5.	Mid-Term Exam	a1,a2,b1,b2		7th	2
6.	DC –DC Chopper Converters	a1,a2,b1,b2,c1,d2	▪ Step down chopper converter ▪ Step up chopper converter ▪ Classifications of chopper converter	8th, 9th, 10th	6
7.	DC – AC Inverters	a1,a2,b1,b2,c1,d2	▪ Single-Phase Voltage Source Inverters ▪ Three-Phase Voltage Source Inverters ▪ Current Source Inverters	11th, 12th 13th	6

			▪ Pulse width modulation technique ▪ Harmonic analysis ▪ Closed-Loop Operation of Inverters		
8.	AC Voltage converter	a1,a2,b1,b2,c1,d2	▪ Single Phase AC Controllers. ▪ Three Phase AC Controllers. ▪ Harmonic analysis ▪ Cycloconverters	14th, 15th	4
9.	Final Exam	a1,a2,b1,b2	▪ All topics	16th	2
Number of Weeks /and Units Per Semester				**16**	**32**

B – Tutorial Aspect:

Order	Tasks/ Experiments	Number of Weeks	Contact hours	Learning Outcomes
1.	▪ Operation and characteristics of diode rectifiers ▪ Performance parameters of uncontrolled rectifiers (diode) ▪ Analyzing of uncontrolled rectifier circuits ▪ Simulating uncontrolled rectifiers by using MATLAB ▪ Effects of load inductance on load currents	1st, 2nd	4	a1,b1,d1,d2
2.	▪ Operation and characteristics of controlled rectifiers (Thyristor) ▪ Performance parameters of controlled rectifiers ▪ Analyzing of controlled rectifier circuits ▪ Simulating controlled rectifiers by using MATLAB	3rd, 4th, 5th	6	a1,a2,b1,b2,c1,d1,d2

	▪ Effects of load inductance on load currents			
3.	▪ Operation dc – dc converters (chopper) ▪ Performance parameters of dc converter ▪ Analyzing of dc converter ▪ Simulating dc converter by using MATLAB ▪ Effects of load inductance on load currents and the conditions for continuous current	6^{th}, 7^{th}, 8^{th}	6	a1,a2,b1,b2,c1,d1,d2
4.	▪ Operation dc – ac converters known as inverters ▪ Performance parameters of inverters ▪ Analyzing of dc converter ▪ Simulating inverters by using MATLAB ▪ Effects of load impedance on load currents	9^{th}, 10^{th}, 11^{th}	6	a1,a2,b1,b2,c1,d1,d2
5.	▪ Operation of ac voltage controllers ▪ Operation of matrix converters ▪ Performance parameters of ac voltage controllers ▪ Analyzing of ac voltage controllers ▪ Simulating ac converter by using MATLAB ▪ Effects of load inductance on load currents	12^{th}, 13^{th}, 14^{th}	6	a1,a2,b1,b2,c1,d1,d2
Number of Weeks /and Units Per Semester		**14**	**28**	

C - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**Contact hours**	**Learning Outcomes**
1.	▪ Safety regulations and requirements in electrical laboratories. ▪ Introduction to main laboratory devices and instrumentations. ▪ Introduction to main measurement devices. ▪ Reporting format.	1st	2	a1,b1,c1,c2
2.	▪ Diodes, SCR and TRIC Characteristics	2nd	2	a1,b1,c1,c2,d1,d2
3.	▪ Single phase half and full wave uncontrolled rectifier	3rd	2	b1,b2,c1,c2,d1,d2
4.	▪ Three phase half wave and full wave uncontrolled rectifier	4th , 5th	4	b2,c1,c2,d1,d2
5.	▪ Single phase half wave, semi and full wave-controlled rectifier	6th , 7th , 8th	6	c1,c2,d1,d2
6.	▪ Three phase half wave and full wave-controlled rectifier	9th , 10th	4	a1,a2,b1,b2,c1,c2
7.	▪ Step down chopper with (R- L) Load	11th	2	b1,b2,c1,c2,d1,d2
8.	▪ Single phase inverter	12th	2	a1,a2,b2,c1,c2
9.	▪ Single phase AC voltage controller	13th	2	b2,c1,c2,d1,d2
10.	▪ Review	14th	2	a1,a2,b2,c1,c2
11.	▪ Final exam	15th	2	b1,b2,c1,c2,d1,d2
Number of Weeks /and Units Per Semester		**14**	**28**	

VI. Teaching strategies of the course:

- Lectures
- Problem Solving
- Laboratory works
- Design exercises
- Project work
- Simulation Tools

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VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1.	Comparison between types of power diodes	a1,a2,b1,b2,d2	3rd	4
2.	Design and implementation of uncontrolled rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	4th	4
3.	Design and implementation of controlled rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	6th	4
4.	Design and implementation of DC – DC choppers circuits using MATLAB tools	a1,a2,b1,b2,c1	8th	4
5.	Design and implementation of DC- AC rectifier circuits using MATLAB tools	a1,a2,b1,b2,c1	10th	4
	Total			**20**

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1.	Quizzes	4th ,7th, 10th, and 13th	20	10%	a1,a2,b1,b2
2.	Assignments & Homework, Tasks & Presentation	Weekly	20	10%	a1,a2,b1,b2,d1,d2
3.	Mid-Term exam	7th	20	10%	a1,a2,b1,b2
4.	Final exam practical	15th	40	20%	a1,a2,b1,b2,c1,c2
5.	Final Exam theory	16th	100	50%	a1,a2,b1,b2
	Total		**200**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. M. H. Rashid, 2014, "Power electronics: circuits, devices, and applications," fourth edition, Prentice Hall

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	2. Austin Hughes, (2006) Electric Motors and Drives Fundamentals, Types and Applications, 3rd Edition, Elsevier Ltd.
2- Essential References.	
	1. Cyril W. Lander, 1993, "Power electronics", 3rd edition, McGraw-Hill. **2.** B. W. Williams, 1992, Power Electronics, Devices, Drivers, Application and Passive components **3.** Fang Lin Luo, Hong Ye, Muhammad Rashid, "Digital Power Electronics and Applications", 2005, Elsev USA **4.** E. Acha, Power Electronics control in Electrical system, 1st, 2002, Newnes.
3- Electronic Materials and Web Sites etc.	
	1. www.goelectricdrive.com/ **2.** www.electricmachinery.com/ **3.** www.goelectricdrive.com/ **4.** http://www.ece.tamu.edu/~empelab/

X. Course Policies:

1.	**Class Attendance:** A student should attend not less than 75 % of total hours of the subject; otherwise he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring an approved statement from university Clinic
2.	**Tardy:** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he will be considered as absent.
3.	**Exam Attendance/Punctuality:** A student should attend the exam on time. He is Permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam-
4.	**Assignments & Projects:** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time-
5.	**Cheating:** For cheating in exam, a student will be considered as failure. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty-
6.	**Plagiarism:**

	Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proved a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university.
7.	**Other policies:** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room - Mobile phones are not allowed in class during the examination. Lecture notes and assignments my given directly to students using soft or hard copy